Long-term successes in fisheries management: species recovery, dam evolution, and hatchery reform

> Todd Pearsons American Fisheries Society Bremerton, Washington April, 2019



Grant County
PUBLIC UTILITY DISTRICT

#### **Competition to achieve values**



#### Limited Paths to Success

Success

## 3 Examples of Success

- 1. Endangered species recovery
- Dam and flow management evolution
- 3. Hatchery reform





## 1. Oregon chub delisting

- Split into 2 species (Markle et al. 1991)
- Petitioned for threatened

Endangered 11/1993
Down listed to threatened 4/23/2010
Delisted 2/4/2014

#### **Two Possible Approaches**

Normative approach
 Opportunistic approach



## Strategies

- Improved data
- Transplants into off channel ponds
- Low incidence of competing values
- Low cost



#### **Multiplying Success**





Least chub. Photo courtesv of Utah Division of Wildlife Resources

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## 2. Dam and flow management

- About 90,000 dams built
- Historic understanding and valuation of aquatic species
- Increased understanding and weighting of aquatic species (Northwest Power Act 1980, NNI)

#### Dam and flow management - strategy

- Environmental flows
- Improved passage and transport
- Removal of antiquated dams



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#### FOCUS ARTICLE

#### Hydropower and high productivity in the Hanford Reach: A synthesis of how flow management may benefit fall Chinook Salmon in the Columbia River, USA

Russell B. Langshaw<sup>†</sup> | Peter J. Graf | Todd N. Pearsons



### Cle Elum and Skaha Sockeye (passage)

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## Wanapum Dam Fracture (2014)



#### Dams Removed

- About 90,000 dams in the U.S.
- 1,384 dams removed since 1912
- 86 removed in 2017 (American Rivers)



## How did this happen?

Increased weighting of ecosystem values in negotiations and aging dams Identification of ways to achieve multiple objectives Cost of achieving ecosystem values exceeded

benefits of dam in some cases

#### **Multiplying Success**

- "If historical trends continue, by 2050 the United States can expect between 4,000 and 36,000 total [dam] removals" (Zbigniew et al. 2018)
- Klamath River Dams
- Columbia River Treaty (e.g., CBP)
- Climate change

CANADA

## 3. Hatchery Reform

- Hatcheries and harvest (75-90%)
- ESA catalyzed need to reform hatcheries
- The HSRG started in about 2000
- One of the largest reform actions in fisheries

#### Feature: conservation management

Hatcheries, Conservation, and Sustainable Fisheries—Achieving Multiple Goals: Results of the Hatchery Scientific Review Group's Columbia River Basin Review

#### Hatchery Reform Success

- Expert group diversity
- Tools and indices (AHA, PNI)
- Goal-oriented, scientific process

Principles for Hatchery Management



#### **Priest Rapids Hatchery Reform**





![](_page_18_Figure_3.jpeg)

### **Multiplying success**

- Hatcheries in California, Canada, Alaska
- Harvest reform

![](_page_19_Picture_3.jpeg)

#### Winning Characteristics

## Times

# Tools Teams

## **Multiply Paths to Success**

Success

## Thanks

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